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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,474	09/16/2003	Hiroyuki Hyodo	031161	9634

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EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/662,474

Applicant(s)

HYODO ET AL.

Examiner

W. David Coleman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-31, 34 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed April 15, 2005 have been fully considered but they are not persuasive.
2. Applicants contend that Yoshioka et al., U.S. Patent Application Publication No. U.S. 2002/0043215 herein known as Yoshioka fails to disclose Applicants claimed invention. Specifically, Yoshioka fails to teach a first solid material is not directly gasified by sublimation from a solution containing the same. Applicants further contend that Yoshioka does not disclose a sublimation chamber because there is no solid to sublimated.
3. In response to Applicants arguments that Yoshioka fails to disclose a sublimation process of a solid substance, Applicants are re-directed to what has been disclosed in Applicants background or related art as disclosed on page one of Applicants disclosure. Applicants note that organometallic compounds are sublimate solid raw material (powder) to form films after dissolving the solid raw material in a solvent, therefore Applicants arguments are moot.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

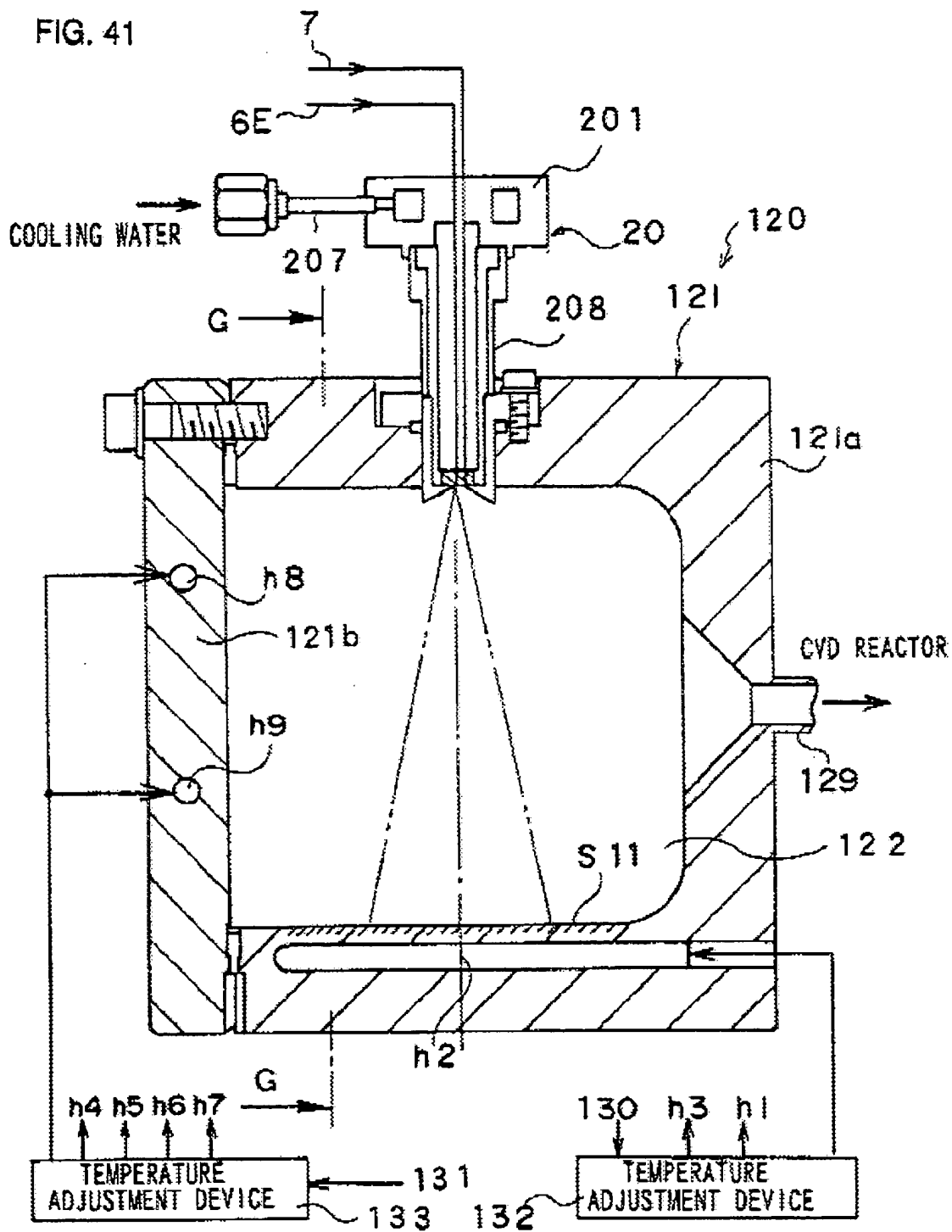
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 18-31, 34 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshioka et al., U.S. Patent Application Publication No: 2002/0043215 A1.

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3. Yoshioka discloses a semiconductor apparatus as claimed. Please see **FIGS. 1-49**, where Yoshioka teaches the claimed invention.



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4. Pertaining to claim 18, Yoshioka teaches an apparatus for gasifying a solid material comprising:

a solvent removal chamber **120** provided with an inlet port **6E/7** of a gasification solution containing a first solid material (**Ba**, **Sr** and **Ti**), [paragraph 0079] and a solvent (THF, tetrahydrofuran) in which it is dissolved, a heating device **131** that vaporizes the solvent used to prepare the gasification solution by heating that solution, and an exhaust port **129** that removes the vaporization product of the solvent, and a solid sublimation chamber (i.e., CVD Reactor) either also used as the solvent removal chamber or arranged communicably adjacent to it, and provided with a heating device that gasifies a second solid material corresponding to the first solid material separated by removal of the solvent by sublimation.

5. Pertaining to claim 19, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the solvent removal chamber and the following solid sublimation chamber are arranged to be separated by an opening and closing partition **V6** (as seen in FIG. 20)

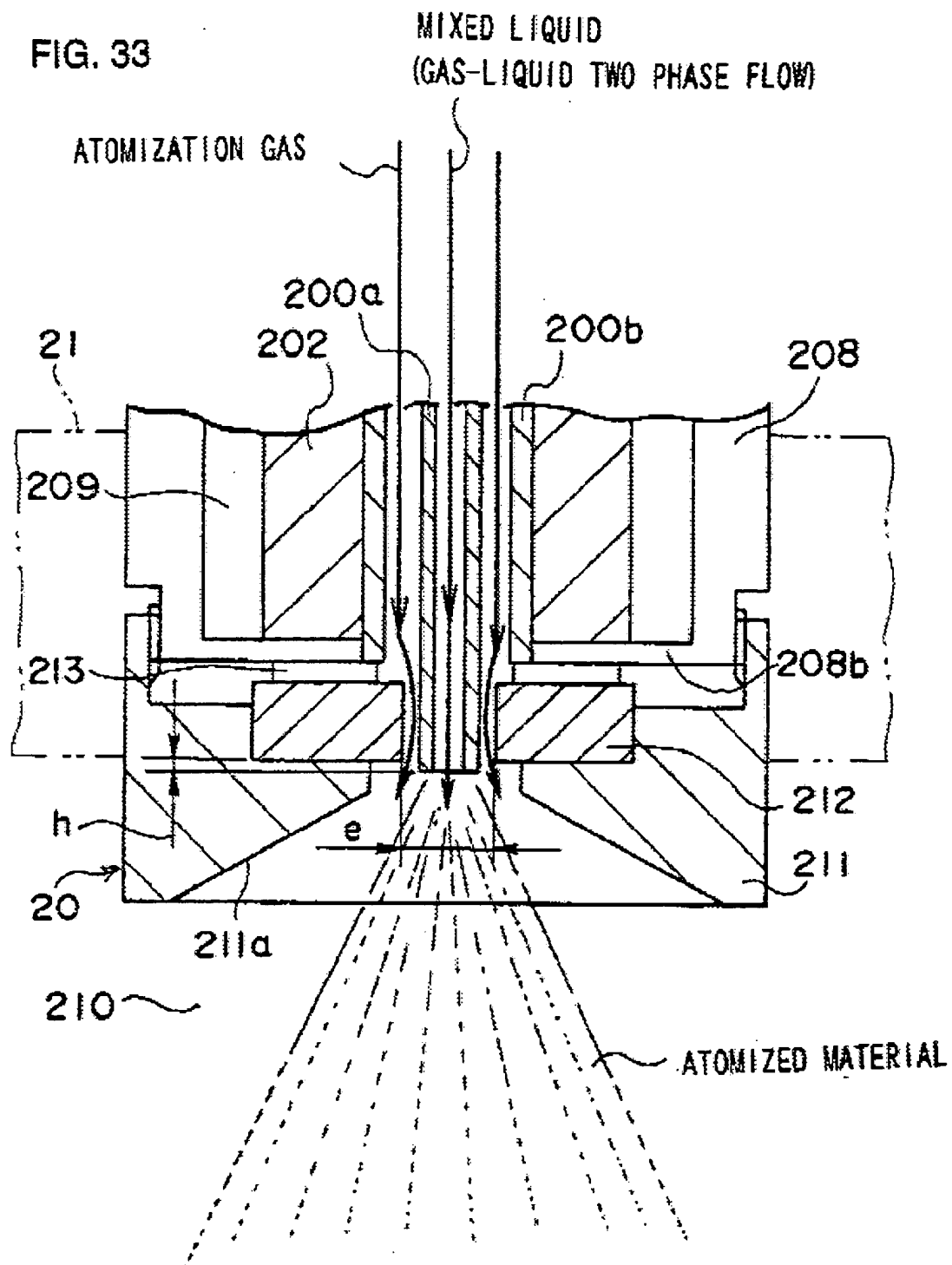
6. Pertaining to claim 20, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the combination solvent removal/solid sublimation chamber is provided with a heating device **65/66** capable of adjusting the heating temperature to vaporize the solvent used prepare the gasification solution by heating it, and gasify the second solid material by sublimation.

7. Pertaining to claim 21, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the solvent removal chamber and the solid sublimation chamber, or

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the combination solvent removal/solid sublimation chamber **13** (drain tank as seen in **FIG. 22**), are respectively composed of closed spaces.

8. Pertaining to claim 22, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the solvent removal chamber or combination solvent removal/solid sublimation chamber is provided with a dissemination means **210** (see **FIG. 33** below) that introduces the gasification solution in the form of fine droplets.



9. Pertaining to claim 23, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the solvent removal chamber or the combination solvent removal/solid



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sublimation chamber additionally has a solid carrier (i.e., powder) to which the second solid material is adhered in the form of fine solid particles (the Examiner takes the position that either the substrate or the vacuum pump meets this limitation).

10. Pertaining to claim 24, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 23, wherein the solid carrier is a porous material (bismuth, paragraph 0180) arranged in the solvent removal chamber.

11. Pertaining to claim 25, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 24 additionally having a transport means that moves the porous material from the solvent removal chamber to the solid sublimation chamber.

12. Pertaining to claim 26, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 23, wherein the solid carrier is a porous inner wall of the combination solvent removal/solid sublimation chamber (the Examiner takes the position that porous materials have inter-walls).

13. Pertaining to claim 27, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 23, wherein the solid carrier is composed of a porous metal material.

Pertaining to claim 28, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 23, wherein the solid carrier is composed of a porous ceramic material PZT and  $\text{TiO}_2$  are ceramic materials, paragraph 0180).

14. Pertaining to claim 29, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the solid sublimation chamber or combination solvent removal/solid sublimation chamber is additionally provided with a carrier gas inlet for transferring reactive gas

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generated by sublimation of the second solid material to a following treatment chamber (see FIG. 2 where a carrier gas is disclosed).

15. Pertaining to claim 30, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 18, wherein the first solid material is composed of at least one type of organometallic compound (please note that THF is part of the organometallic compound).

16. Pertaining to claim 31, Yoshioka teaches an apparatus for gasifying a solid material as set forth in claim 30, wherein the organometallic compound is selected from the group consisting of Pb(DPM)<sub>z</sub>, Zr(DPM)Q, Ti(i.PrO)<sub>2</sub>(DPM)<sub>2</sub>, Ba(DPM)<sub>2</sub>, Sr(DPM)<sub>2</sub>, Ta (O-Et) , and Bi (DPM) <sub>3</sub>

Pertaining to claim 34, Yoshioka teaches an apparatus for forming a thin film from a solid material comprising:

a solvent removal chamber provided with an inlet port of a gasification solvent containing a first solid material and a solvent in which it is dissolved,

a heating device that vaporizes the solvent used to prepare the gasification solution by heating that solution, and an exhaust port that removes the vaporization product of the solvent,

a solid sublimation chamber either also used as the solvent removal chamber or arranged communicably adjacent to it, and

provided with a heating device that gasifies a second solid material separated by removal of the solvent by sublimation, and a film formation chamber wherein the thin film is deposited on a treated substrate using as raw material the reactive gas generated from the second solid material corresponding to the first solid material, in the solid sublimation chamber or combination solvent removal/solid sublimation chamber (see the rejection of claim 18).

17. Pertaining to claim 35, Yoshioka teaches an apparatus for forming a thin film from a solid material as set forth in claim 34 provided with a gasification apparatus as set forth in any one of claims 19 to 31.

### *Objections*

The Examiner Objects to the amendment of claim 35. It is not clear as to what has been amended since what is not underlined was never previously presented before the Office and therefore claim 35 which was present before the amendment of April 15, 2005.

### *Conclusion*

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:30 PM.

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21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'W. David Coleman', with a large, sweeping loop at the end.

W. David Coleman  
Primary Examiner  
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WDC